

C6 Reprocessing of Tier2 Products Status and Plan

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Updated Aug 25, 2015

Tier2 Products: PI and Products Suite

- Snow Cover (Dorothy Hall and George Riggs)
 - MxD10_L2 (L2-daily Swath) and MxD10L2G, MxD10GA (L2G-daily heavy and lite)
 - MxD10A1 and MxD10A2 (L3 daily and 8-day)
 - MxD10C1, MxD10C2, MxD10CM (CMG daily, 8-day and monthly)
- MAIAC (Alexei Lyapustin and Yujie Wang)
 - MxDMAIAC1km, MxDMAIAC1kmGeo (Daily L2G intermediates – TOA products)
 - MCD19A1 (Daily Surface Reflectance - 500m and 1km), and MCD19A2 (Daily AOT)
 - MCD19A3 (8-day BRDF Model Parameters)
- Evapotranspiration (Steve Running)
 - MxD16A1, MxD16A2, and MxD16A3 (L3 daily, 8-day and yearly)
- Land Surface Temperature – JPL (Glynn C. Hulley)
 - MxD21 (L2 Daily Swath) and MxD21L2G (L2G daily)
 - MxD21A1, MxD21A2 and MxD21A3 (L3 daily, 8-day and Monthly)
- Burned Area (Louis Giglio)
 - MCD64A1 (L3 daily intermediate), and MCD64A2 (L3 Monthly)
- Land Cover Change and Dynamics (Mark Friedl, Damien and Josh)
 - MCD12Q1 (Annual LC) and MCD12Q2 (Annual Phenology)
- Vegetation Cover Fraction (Charlene)
 - MCD44B (Yearly VCF)

Snow Cover (MxD10)

- Latest delivery of changes in the IDL version received from George Riggs (8/3/2015)
 - Use surface temperature estimate from band 31 and surface height from MOD03 to make a screen for snow commission errors on low elevation warm surfaces.
 - Replaced FSC with the NDSI snow map output (original FSC without the FSC regression equation applied).
 - Revised screens for snow commission errors and/or setting of QA bit flags.
 - Change determination of the basic QA values.
 - Include the NDSI values for all pixels in a swath, an option we discussed at our last meeting.
- Review and implement the changes in operational versions of PGE07 and downstream L2G and daily L3 PGEs. (9/11/2015)
- Science Test1: of L2/L2G/L3 daily generating global data from 8-day summer and winter periods of Aqua and Terra. Evaluate test results (9/18/2015)
- Delivery of PGEs: Revise the PGE with needed fine tuning of algorithm and accordingly update downstream L3 daily, n-day tiled and CMG PGEs. (10/19/2015).
- Science Test2: Repeat the science test, run additional targeted science tests for different period needed to verify specific changes. Generate at least a month of data to test the monthly CMG. Evaluate Test results. (10/23/2015)
- Start reprocessing (11/23/2015)

MAIAC (MCD19)

- C5 MODAPS version included PGE12 (L1B gridding) and PGE113 (MAIAC)
- Delivery of science team version of the L1B TOA gridding code (5/8/2015)
 - Change for ozone correction of TOA 1-19, 26
 - Convert to BT for bands 21-22, 31 and destriping of band 22
 - Use of gridded ancillary WV, UWIND, VWIND
- Delivery of PGE135 (MAIAC L1B Correction) (7/7/2015)
 - Migrate the MAIAC PGE12 from C5 to operational C6 PGE12
 - Remove the de-trending, Polarization correction, gain adjustment etc in TOA Gridding code, because it is already part of PGE128 (L1B polarization Correction process)
 - Include ozone correction, conversion of BT, and de-stripping as a pre-processing step
- Science Test1: Run 1-year (2003) 1-tile (h12v04) test of PGE135 (7/21/2015)
- Delivery of PGE113: Updated to use GDAS (8/4/2015)
- Science Test2: Run 1-year 1-tile test PGE113 (8/14/2015)
- Science Test3: 8-day Global Test of PGE135 (8/21/2015)
- Delivery of PGE113, PGE135: With changes after fine tuning of PGE113 based on test result (9/15/2015)
- Science Test4: Run 3-month global test of PGE135 and PGE113 to assess science quality and PGE performance. (9/22/2015)
- Delivery and Science Test 5: Repeat the 3-month test with final changes (10/26/2015)
- Start of Reprocessing (11/25/2015)

Evapotranspiration (MxD16)

- First operational version of the PGE developed at LDOPE from NTSG's science version of the code (08/22/2013).
- Make following changes to the current operational version (8/14/2015)
 - Change product resolution to 500m from current resolution of 1km
 - Replace climate inputs with the near real time operational data from GMAO.
 - Change all climate variable inputs from binary to HDF4 format.
 - Replace the tiled SRTM data with the DEM used at MODAPS.
 - Replace the land cover file MOD12Q1 with the multi-year land cover products.
 - Replace the climatological inputs for the annual average temperature with multi-year mean (3-5 years).
- Generate climatological multi-year mean. Need to develop a tool and then run the tool to generate the climatology temperature (8/21/2015)
- Science Test1: Generate 16-days of global data to verify the implementation and evaluate test result (8/28/2015)
- Delivery and Science Test2: Delivery with needed changes. Generate 3-5 years of global data for validation and fine tuning of LUT. Processing rate expected to be same as for MxD17 (9/20/2015)
- Delivery of Final version of LUT and code (11/10/2015)
- Science Test3: Test of final version of the PGE (11/16/2015)
- Start reprocessing (12/15/2015)

LST-JPL (MxD21)

- Delivery of prototype version of operational code for PGE116 by JPL (8/6/2015)
 - Prior version updated to use RTTOV in place of MODTRAN.
 - This is a prototype version to help rebuild the PGE, not expected to generate science quality product.
- Delivery1 of PGE116 by JPL (8/28/2015)
 - will include changes producing science quality product
 - Science team will continue to evaluate fine tune using validation data
- Science Test1 (9/04/2015)
 - Generate global L2, L2G and L3 data for two 8-day periods starting with data day 2003001 and 2004214
- Delivery2 of PGE116 and downstream L3 PGEs (10/16/2015)
 - PGE116 updated based on outcome of validation and quality assessment of test result
 - Delivery of L3 daily PGE with changes and first version of 8-day PGE
- Science Test2 (10/23/2015)
 - Repeat Chain test of LST PGEs (L2, L2G, L3 daily and 8-day)
- Delivery3 of LST PGEs (11/27/2015)
 - Delivery of incremental changes to PGEs, and monthly LST PGE
- Science Test3 (12/04/2015)
 - Repeat Chain test of LST PGEs
- Start of Reprocessing (1/5/16)

Burned Area (MCD64)

- Delivery1 of PGE133 (5/20/2015): Generates intermediate daily MCD64A0
- Science Test1 (6/22/2015): Generate global MCD64A0 for year 2006
- **Delivery2 of PGE133: Fix for false cloud and some of the metadata issues (Aug 30, 2015)**
- Science test2 of PGE133: Repeat science test1 and Verify the changes
- Delivery1 of PGE134: Generate monthly BA (MCD64A1). Initial delivery will be coarsely tuned version since the needed Landsat based reference maps will not be available yet until late 2015.
- Test of BA PGE134: Run PGE134 using input from science test2. Generate MCD64A1 globally for year 2006
- Delivery of Land Cover: Will contain the UMD layer of MCD12Q1 but “cleaned and consolidated” for uncertainty and valid data for grids with missing classification. (Delayed by 5 months)
- **Delivery2 of PGE134: Final delivery of BA PGE(s) – Winter of 2016.**
- Chain test of BA year 2006
- **C6 Reprocessing – expected Spring 2016.**

LC (MCD12Q1 and MCD12Q2)

- Need to migrate the science processing software to operational processes running on MODAPS. (After September 2015): PGE_{xxx} and PGE_{yyy}.
- These two processes originally written in R software. Seems to have been ported for operation using GPU with CUDA software architecture. This operational software expected to be a variation of C, but will not run directly on MODAPS minions. LDOPE staff will translate the software to a process in conventional C that can run on MODAPS minions.
- Post processing PGEs (PGE41 and PGE42) consolidating the land cover datasets into final LC product may have to be updated.

VCF (MOD44B)

- Science Team is still reviewing the input data (MOD44CH and MOD44CQ) from the on-going C6 reprocessing.
- No changes to the processing code expected (PGE61)
- To help science team with the on-going review of C6 intermediate products (MOD44CH and MOD44CQ), STIG will baseline the C51 PGE61 as C6, and MODAPS will run a science test of C6 PGE61 generating annual VCF from years 2005 and 2010 using the C6 intermediate as inputs.
- Science team will review this test version of C6 VCF to diagnose issue in the VCF or the inputs, and envision changes to intermediate or the C6 VCF algorithm.

Tier2 C6 Land: Code Change **Delivery**, **Testing & Evaluation**, and **Reprocessing** Schedule

